$$4)\ \cos(\varphi_i - \varphi_u) = \frac{R+r}{Z}$$

$$\Rightarrow r = Z\cos\Delta\varphi - R$$

$$r = Z\cos\frac{\pi}{4} - 50$$

$$r = 17,55\Omega$$

$$tg(\varphi_i - \varphi_u) = \frac{\frac{1}{C\omega} - L\omega}{R+r}$$

$$\Rightarrow L = \frac{1}{C\omega^2} - \left(\frac{R+r}{\omega}\right) tg(\varphi_i - \varphi_u)$$

$$L = 5,83.10^{-2} H$$

$$u(t) = u_m \sin(\omega t + \underbrace{\varphi_u}_{0})$$

$$\boxed{u(t) = 7,5\sin(500\pi t)}$$

$$u_C(t) = U_{C_m} \sin(\omega t + \varphi_{u_c})$$

$$\boxed{u_C(t) = 12,5\sin(500\pi t - \frac{\pi}{4})}$$

$$i(t) = I_m \sin(\omega t + \varphi_i)$$

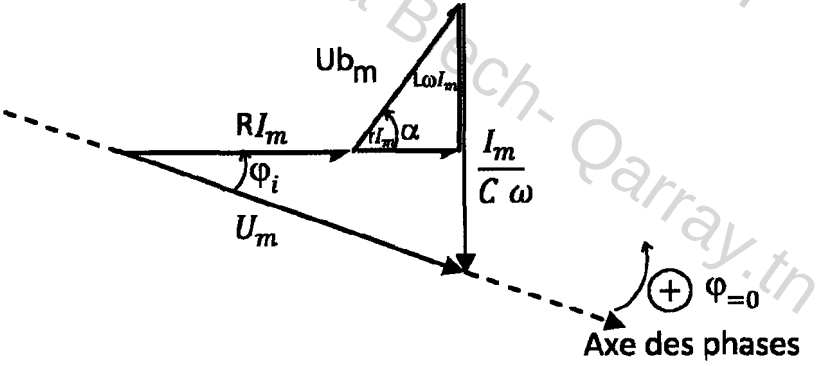
$$i(t) = 7,85.10^{-2} \sin(500\pi t + \frac{\pi}{4})$$

$$u_b(t) = U_{b_m} \sin(\omega t + \varphi_b) \quad \text{avec } U_{b_m} = \sqrt{r^2 + (L\omega)^2} I_m = 7,32V$$

$$\varphi_b = \varphi_i + \alpha$$

$$tg\alpha = \frac{L\omega}{r} = 5,22$$

$$\Rightarrow \alpha = 1,38rad$$



Qarray.tn -Aqra Bleach- Qarray.tn